

Amendments to the Claims

Claim 1-5 (Cancelled).

Claim 6 (Currently amended): A method of forming a pattern in a low-k dielectric material, comprising:

providing a semiconductor substrate having a low-k dielectric material thereover, wherein the semiconductor substrate has an optical alignment pattern supported thereby;

providing a mold having a first pattern comprising projections and valleys between the projections wherein, the mold comprises a region through which the optical alignment pattern can be viewed during an alignment of the mold and substrate relative to one another;

aligning the mold and substrate relative to one another before the pressing;

pressing the low-k dielectric material between the mold and the semiconductor substrate to form a second pattern in the low-k dielectric material, the second pattern being substantially complementary to the first pattern; and

removing the mold from over the low-k dielectric material.

Claim 7 (Original): The method of claim 6 wherein the mold comprises a siloxane composition.

Claim 8 (Original): The method of claim 6 wherein the mold comprises a silicone composition.

Claim 9 (Cancelled)

Claim 10 (Currently amended): The method of claim 6 ~~further comprising aligning the mold and substrate relative to one another before the pressing, and wherein: one, one~~ of the semiconductor substrate and the mold has a pin associated therewith during the aligning; the other of the semiconductor substrate and the mold has a receptacle associated therewith during the aligning; and the aligning comprises mating the pin within the receptacle.

Claim 11 (Original): The method of claim 6 wherein the second pattern comprises openings extending through the low-k dielectric material, and further comprising forming a conductive material within the openings.

Claim 12 (Original): The method of claim 11 further comprising forming a redistribution layer within the openings of the second pattern.

Claim 13 (Original): The method of claim 6 wherein the second pattern comprises shallow trenches within the low-k dielectric material and deep openings through the low-k dielectric material, and further comprising forming a conductive material within the trenches and openings.

Claim 14 (Original): The method of claim 13 wherein the conductive material within the trenches and openings corresponds to at least a portion of a redistribution layer.

Claim 15 (Currently amended): A method of forming a pattern in a mass provided over a patterned material on a semiconductor wafer comprising:

providing a mold having a complement of the pattern formed in the mass thereon; and

providing a first alignment article associated with the patterned material and a second alignment article associated with the mold; and

pressing the mold into the mass; wherein the first and second alignment articles are aligned relative to one another during the pressing of the mold into the mass.

Claim 16 (Original): The method of claim 15 wherein the mass does not consist essentially of photoresist.

Claim 17 (Original): The method of claim 15 wherein the mass does not comprise photoresist.

Claim 18 (Cancelled).

Claim 19 (Original): A method of forming a mold, comprising:

providing a template having a complement of a desired mold pattern there over, the template being approximately the size of a semiconductor wafer and the desired mold pattern being a pattern utilized for contact lithography during semiconductor processing;

providing a sheet having holes extending there through;

providing a mold material precursor between the sheet and the template;

pressing the mold material precursor between the sheet and the template;

curing the mold material precursor during the pressing to convert the precursor to a mold material having the desired mold pattern; the mold material penetrating through the openings in the sheet and being joined with the sheet to define a mold comprising the mold material and the sheet; and

removing the mold from the template.

Claim 20 (Original): The method of claim 19 wherein the pressing and curing comprise hot isostatic pressing of the mold material precursor.

Claim 21 (Original): The method of claim 19 wherein the mold material is a thermoplastic material.

Claim 22 (Original): The method of claim 19 wherein the cured mold material is a semi-solid material.

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Claim 23 (Original): The method of claim 19 wherein the cured mold material is a silicone rubber.

Claim 24 (Original): The method of claim 19 wherein the sheet comprises a substantially rigid material.

Claim 25 (Original): The method of claim 19 wherein the sheet material is a metallic material.

Claim 26 (Original): The method of claim 19 wherein the sheet comprises spring steel.

Claim 27 (Original): The method of claim 19 wherein the template has a first alignment article associated therewith, the sheet has a second alignment article associated therewith, and further comprising aligning the first and second alignment articles relative to one another before the pressing.

Claim 28 (Original): The method of claim 27 wherein one of the first and second alignment articles is a pin and the other of the first and second alignment articles is a receptacle; and wherein the aligning comprises mating the pin within the receptacle.

Claim 29 (Original): The method of claim 27 wherein the template is shaped substantially identically to a semiconductor wafer; wherein the template is provided within a holder prior to the pressing, and wherein the first alignment article is part of the holder.

Claim 30 (Original): The method of claim 27 wherein the template is a semiconductor wafer; wherein the template is provided within a holder prior to the pressing, and wherein the first alignment article is part of the holder.

Claim 31 (Original): The method of claim 27 further comprising utilizing the mold to form a pattern in a material across a semiconductor wafer.

Claim 32 (Original): The method of claim 27 further comprising utilizing the mold for contact lithography of a mass across a semiconductor wafer; the method including:

providing a semiconductor wafer having a mass there over, the wafer having a third alignment article associated therewith;

aligning the second alignment article with the third alignment article; and

after aligning the second and third alignment articles with one another, pressing the mold relative to the mass to form a reverse image of at least a portion of the mold pattern within the mass.

Claim 33 (Original): The method of claim 32 wherein the semiconductor wafer is provided within a holder prior to the pressing, and wherein the third alignment article is part of the holder.

Claim 34 (Original): The method of claim 32 wherein one of the second and third alignment articles is a pin and the other of the second and third alignment articles is a receptacle; and wherein the aligning comprises mating the pin within the receptacle.

Claim 35 (Original): The method of claim 32 wherein the third alignment article is a first optical pattern, and is supported by the semiconductor wafer; wherein the mold comprises a substantially transparent portion and a second optical pattern within the substantially transparent portion; and wherein the aligning comprises aligning the first and second optical patterns relative to one another.

Claim 36-44 (Cancelled).

Claim 45 (New): A method of forming a pattern in a low-k dielectric material, comprising:

- providing a semiconductor substrate having a low-k dielectric material thereover;
- providing a mold having a first pattern comprising projections and valleys between the projections;
- aligning the mold and substrate relative to one another, wherein one of the semiconductor substrate and the mold has a pin associated therewith and the other of the semiconductor substrate and the mold has a receptacle, the aligning comprising mating the pin within the receptacle
- after the aligning, pressing the low-k dielectric material between the mold and the semiconductor substrate to form a second pattern in the low-k dielectric material, the second pattern being substantially complementary to the first pattern; and
- removing the mold from over the low-k dielectric material.

Claim 46 (New): The method of claim 45 wherein the mold comprises a siloxane composition.

Claim 47 (New): The method of claim 45 wherein the mold comprises a silicone composition.

Claim 48 (New): The method of claim 45 wherein the second pattern comprises openings extending through the low-k dielectric material, and further comprising forming a conductive material within the openings.

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Claim 49 (New): The method of claim 48 further comprising forming a redistribution layer within the openings of the second pattern.

Claim 50 (New): The method of claim 45 wherein the second pattern comprises shallow trenches within the low-k dielectric material and deep openings through the low-k dielectric material, and further comprising forming a conductive material within the trenches and openings.

Claim 51 (New): The method of claim 50 wherein the conductive material within the trenches and openings corresponds to at least a portion of a redistribution layer.